ECOBUILT EFFICIENT BUILDINGS:
MaqCrete Post-Industrial/Bio-Fiber Structural Insulating Masonry Blocks

Impact: The manufacture of Portland cement and concrete are energy intensive processes that have large carbon footprints tied not only to the manufacturing, but also to shipment of final products, of which concrete masonry units (CMU) are one. Conventional masonry units (CMU)(a.k.a. concrete block) combine Portland cement and rock aggregate.

EcoBuilt Efficient Buildings is re-evaluating their MaqCrete formulization, with plans to manufacture a structural masonry unit that has less embodied energy while maintaining structural and insulating properties.

Project Overview: EcoBuilt Efficient Buildings has a patented formula for fibrous cementious material using post industrial waste/bio-based plant fibers as aggregate. This innovative formula utilizes as much as 25% less Portland cement than traditional CMUs, creating a product 30% lighter, thereby utilizing less energy for transport.

EcoBuilt Efficient Buildings has established a collaborative partnership with Drexel University to prepare MaqCrete Masonry Units (MMU) for commercial production through a series of laboratory evaluations. EcoBuilt Efficient Buildings expects the MMUs to have an insulation value of R-23 while maintaining or exceeding the structural integrity of current CMU products.

The project outcome will be cost-competitive Pennsylvania production and distribution of a functional masonry block that can be cut, nailed, screwed, and drilled. The MaqCrete masonry unit will support the use of recycled and bio-based content and reduce the environmental impact compared to conventional CMUs, all while increasing energy efficiency.

GBA Product Innovation Grant Amount: $20,000

Leadership Team: The EcoBuilt Efficient Buildings team is lead by MaqCrete inventor Dennis M. Crook and Siti M. Crook. University partners from Drexel University's Department of Materials Science and Engineering are Dr. Antonios Zavaliangos, *Professor and Department Head;* and Dr. Michel Barsoum; *Grosvenor and Distinguished Professor.*

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Awarded May 2011